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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,081	07/30/2003	Isaac Farr	10019128-1	2201
22879	7590	03/23/2005	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			LIANG, LEONARD S	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/632,081	Applicant(s) FARR, ISAAC	
	Examiner Leonard S. Liang	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-29 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/22/04; 07/30/03
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 12/22/04 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. Specifically, there are no copies of EP 0509747, EP 1125748, and EP 0672528. Also, a copy of JP 2000 296614 has been included, but no English abstract was given.

Specification

The disclosure is objected to because of the following informalities:

- On page 7, line 24, “figure 3” should be labeled “figure 2”
- On page 9, line 5, “second electrode 44” should be labeled “second electrode 34”

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-15, 17-18, 20-22, 24-27, and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Farr et al (US PgPub 20040223021A1)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

- {claim 1} A printing device configured to print a printing fluid onto a printing medium (figure 1); a printing fluid reservoir configured to hold a volume of the printing fluid (figure 1, reference 30); a print head assembly configured to transfer the printing fluid to the printing medium, wherein the print head assembly is fluidically connected to the printing fluid reservoir (figure 1, reference 12); a printing fluid detector configured to detect a characteristic of the printing fluid, wherein the printing fluid detector includes a first electrode and a second electrode configured to be in contact with the printing fluid, and wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive coating disposed over an electrically conductive substrate (page 6, claim 1; page 7, claim 11)
- {claim 2} wherein the substrate is made at least partially of a material selected from the group consisting of stainless steel, gold, palladium, activated carbon,

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carbon black, carbon fiber cloth, graphite, glassy carbon, carbon aerogel, and cellulose-derived foamed carbon (page 7, claim 7)

- {claim 3} wherein the graphite is a graphite powder or a graphite cloth (paragraph 32)
- {claim 4} wherein the substrate is made at least partially of a carbon material modified by a technique selected from the group consisting of liquid-phase oxidations, gas-phase oxidations, gas-phase oxidations, plasma treatments, and heat treatments in inert environments (page 7, claim 8)
- {claim 5} wherein the electrically conductive coating is permeable to printing fluid and is configured to increase the effective surface area of the electrode accessible to the printing fluid (paragraph 33)
- {claim 6 and 20} wherein the electrically conductive coating is made at least partially from an electrically conductive polymer (page 7, claim 11)
- {claim 7, 21, and 29} wherein the electrically conductive polymer is selected from the group of electrically conductive polymers consisting of polypyrroles, polyanilines, polythiophenes, conjugated bithazoles and bis-(thienyl) bithiazoles (page 7, claim 12)
- {claims 8 and 22} wherein the electrically conductive polymer is cross-linked (paragraph 33)
- {claim 9} wherein the electrically conductive coating is resistant to corrosion by printing fluid (paragraph 33)

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- {claims 10 and 26} wherein the electrically conductive coating is made at least partially of a fluorine-containing polymer (paragraph 33)
- {claims 11, 24, and 27} wherein the fluorine-containing polymer/protective coating is a TEFLON material (paragraph 33)
- {claim 12} wherein the first electrode and second electrode are disposed at least partially within the printing fluid reservoir (figure 2, reference 46, 48)
- {claim 13} further comprising a conduit fluidically connecting the printing fluid reservoir to the print head assembly, wherein the first electrode and the second electrode are disposed at least partially within the conduit (figure 1, reference 12, 30; figure 2, reference 46, 48; paragraph 0022)
- {claim 14} wherein the print head assembly includes a print head assembly reservoir configured to be periodically refilled with printing fluid from the printing fluid reservoir, and wherein the first electrode and the second electrode are disposed at least partially within the print head assembly reservoir (figure 2, reference 46, 48; paragraph 0022)
- {claim 15} wherein both the first and second electrode are coated with the electrically conductive coating (page 7, reference 11)
- {claim 17} A printing device configured to print a printing fluid onto a printing medium (figure 1); a printing fluid reservoir configured to hold a volume of the printing fluid (figure 1, reference 30); a print head assembly configured to transfer the printing fluid to the printing medium, wherein the print head assembly is in fluid communication with the printing fluid reservoir (figure 1, reference 12, 30);

and a printing fluid detector configured to detect a characteristic of the printing fluid, wherein the printing fluid detector includes a first electrode and a second electrode configured to be in contact with the printing fluid, and wherein at least one of the first electrode and the second electrode includes an electrically conductive coating permeable to printing fluid disposed over an electrically conductive substrate (figure 2, reference 46, 48; page 6, claim 1; page 7, claim 11)

- {claim 18} wherein the electrically conductive coating includes a plurality of interior surfaces contactable by the printing fluid (inherent in claim 11)
- {claim 19} wherein the electrically conductive coating is porous (inherent in paragraph 33; in order to allow electrodes to sense ink)
- {claim 20} wherein the electrically conductive coating is at least partially made of a polymer (page 7, claim 11)
- {claim 21} wherein the polymer is selected
- {claim 25} A printing device configured to print a printing fluid onto a printing medium (figure 1); a printing fluid reservoir configured to hold a volume of the printing fluid (figure 1, reference 30); a print head assembly configured to transfer the printing fluid to the printing medium, wherein the print head assembly is in fluid communication with the printing fluid reservoir (figure 1, reference 12); and a printing fluid detector configured to detect a characteristic of the printing fluid, wherein the printing fluid detector includes a first electrode and a second electrode configured to be in contact with the printing fluid, wherein at least one of the first electrode and second electrode includes a protective electrically

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conductive polymer coating disposed over an electrically conductive substrate, the protective electrically conductive polymer coating being resistant to corrosion by the printing fluid (figure 2, reference 46, 48; page 6, claim 1; page 7, claim 11; paragraph 33)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

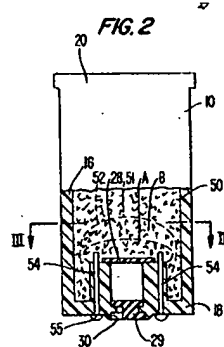
Claims 1, 17, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morandotti et al (US Pat 5289211) in view of Kumada et al (US Pat 5097248).

Morandotti et al discloses:

- {claim 1} A printing device configured to print a printing fluid onto a printing medium (column 2, lines 28-43); a printing fluid reservoir configured to hold a volume of the printing fluid (figure 2, reference 10); a print head assembly configured to transfer the printing fluid to the printing medium, wherein the print head assembly is fluidically connected to the printing fluid reservoir (column 2, lines 25-43); a printing fluid detector configured to detect a characteristic of the printing fluid, wherein the printing fluid detector includes a first electrode and a second electrode configured to be in contact with the printing fluid (figure 2, reference 54; column 2, lines 28-43)

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- {claim 17} A printing device configured to print a printing fluid onto a printing medium (column 2, lines 28-43); a printing fluid reservoir configured to hold a volume of the printing fluid (figure 2, reference 10); a print head assembly configured to transfer the printing fluid to the printing medium, wherein the print head assembly is in fluid communication with the printing fluid reservoir (column 2, lines 25-43); and a printing fluid detector configured to detect a characteristic of the printing fluid, wherein the printing fluid detector includes a first electrode and a second electrode configured to be in contact with the printing fluid (figure 2, reference 54; column 2, lines 28-43)



- {claim 25} A printing device configured to print a printing fluid onto a printing medium (column 2, lines 28-43); a printing fluid reservoir configured to hold a volume of the printing fluid (figure 2, reference 10); a print head assembly configured to transfer the printing fluid to the printing medium, wherein the print head assembly is in fluid communication with the printing fluid reservoir (column 2, lines 25-43); and a printing fluid detector configured to detect a characteristic of the printing fluid, wherein the printing fluid detector includes a first electrode

and a second electrode configured to be in contact with the printing fluid (figure 2, reference 54; column 2, lines 28-43)

Morandotti et al differs from the claimed invention in that it does not disclose:

- {claim 1} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive substrate
- {claim 17} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating permeable to printing fluid disposed over an electrically conductive substrate
- {claim 25} wherein at least one of the first electrode and second electrode includes a protective electrically conductive polymer coating over an electrically conductive substrate, the protective electrically conductive polymer coating being resistant to corrosion by the printing fluid
- {claim 26} wherein the electrically conductive coating is made at least partially of a fluorine-containing polymer
- {claim 27} wherein the fluorine-containing polymer is a TEFLON material

Kumada et al discloses:

- {claim 1} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive substrate (column 2, line 31-column 3, line 22)

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- {claim 17} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating permeable to printing fluid disposed over an electrically conductive substrate (column 2, line 31-column 3, line 22)
- {claim 25} wherein at least one of the first electrode and second electrode includes a protective electrically conductive polymer coating over an electrically conductive substrate, the protective electrically conductive polymer coating being resistant to corrosion by the printing fluid (column 2, line 31-column 3, line 22; corrosion protection inherent in repelling of ink)
- {claim 26} wherein the electrically conductive coating is made at least partially of a fluorine-containing polymer
- {claim 27} wherein the fluorine-containing polymer is a TEFLON material (column 3, line 1; tetrafluoroethylene is TEFLON)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Kumada et al into the invention of Morandotti et al. The motivation for the skilled artisan in doing so is to gain the benefit of protecting the electrodes.

Claims 16, 23, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morandotti et al (US Pat 5289211) in view of Kumada et al (US Pat 5097248), as applied to claims 1, 17, and 25, and further in view of Nishino et al (US Pat 4276128).

Morandotti et al, as modified, teaches all limitations of the claimed invention except for the following:

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- {claim 16} wherein the electrically conductive coating is a protective polymer coating, further comprising a printing fluid-permeable electrically conductive polymer coating disposed over the protective polymer coating
- {claim 23} further comprising an electrically conductive protective coating disposed between the electrically conductive substrate and the electrically conductive coating permeable to printing fluid
- {claim 28} further comprising a printer fluid permeable electrically conductive coating disposed over the protective electrically conductive polymer coating

Nishino et al discloses:

- {claims 16, 23, and 28} a sensing electrode which comprises a permeable conductive layer formed on top of another permeable conductive layer (column 2, lines 35-50)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Nishino et al into the invention of modified Morandotti et al. The motivation for the skilled artisan in doing so is to gain the benefit of providing an additional protective layer for an electrode sensor.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

DeLouise et al (US Pat 6007173) discloses an ink status system for a liquid ink printer.

Matsuo et al (US Pat 5033300) discloses a device for measuring displacement.

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Kubota et al (US Pat 6827411) discloses a solid semiconductor element, ink tank, ink jet recording apparatus provided with ink tank, liquid information acquiring method and liquid physical property change discriminating method.

Hampo et al (US Pat 5747689) discloses a fluid level sensing system.

Sun et al (US Pat 4166388) discloses an RF admittance measuring method and apparatus for determining the level of a conductive liquid.

Geisselmann (US Pat 3777257) discloses an apparatus with capacitive probes for measuring the location and disposition of an interface between two media.

Gustafson (US Pat 4122718) discloses a liquid level sensor.

Cost (US Pat 5307678) discloses a material level probe having crimp seal.

Whitener (US Pat 3757134) discloses a liquid sensing switch assembly.

Kankura et al (US Pat 4188826) discloses a device for measuring the liquid level of an electrically conductive liquid.

Beckerman (US Pat 6820483) discloses an electronic water solution level detector.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S. Liang whose telephone number is (571) 272-2148.

The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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03/17/05


MANISH S. SHAH
PRIMARY EXAMINER